

SPECIAL TOPICS IN CHEMISTRY - FALL 2024

CHEM 4700A

DEPARTMENT OF CHEMISTRY

--- COURSE OUTLINE ---

Instructor: Tyler Avis (he/him/his)
Food Science Program
Department of Chemistry and Institute of Biochemistry
Carleton University
How to address me: Tyler

Lectures: **In-person lectures/workshops.** Wednesdays, 6:05-8:55 PM, 2400 Canal Building

Contact: **Student hours (a.k.a. office hours):**

No set student hours
By appointment (in-person or virtual)

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Email: tyler.avis@carleton.ca

I can be reached by **email** at almost any time. When possible, I will reply promptly, usually the same day or the next morning.

WELCOME TO THE COURSE

Calendar Description

CHEM 4700 [0.5 credit] - Special Topics in Chemistry

A topic of current interest in any branch of chemistry. Only one special topics course may be presented for credit.

Prerequisite(s): permission of the Department.

Course Description

Active learning in areas that include information literacy, critical evaluation of scientific literature, written and oral communication, evaluation and interpretation of results and data management in the general field of Agrifood Biotechnology

Includes: Experiential Learning Activities

Course Objectives

The course will develop critical thinking and scientific communication skills that will be useful in the workplace or graduate work. Students will choose from a variety of topics in the general field of Agrifood Biotechnology. This includes Agricultural Biotechnology, Food Biotechnology, Nutritional Biotechnology or associated fields (e.g., Environmental Biotechnology related to food). Each student will become the subject matter expert on their chosen topic. Workshops will guide students to develop science communications in various formats including a slide deck and an infographic related to their topic of choice.

Topics may include:

1. Agricultural Biotechnology:

- a. Increasing crop productivity/yield
- b. Increasing animal productivity or health
- c. Reducing food spoilage

2. Food Biotechnology:

- a. Fermentation biotechnology
- b. Enzyme production/usage
- c. Lab-grown meat

3. Nutritional Biotechnology:

- a. Probiotics in food
- b. Increased/added nutritional value
- c. Protein and dairy alternatives

4. Environmental Biotechnology:

- a. Lesser environmental impact (e.g., less chemical input, reduced packaging)
- b. Reduced carbon and food footprint
- c. Waste reduction
- d. Reduction of greenhouse gas (GHG) emissions

Learning Outcomes

Through this course, students will learn to:

1. Demonstrate understanding of agrifood biotechnology topics and principles <ul style="list-style-type: none">a. Become subject specialist on a topic of their choosingb. Participate in discussion on related topicsc. Critically assess and question scientific findings
2. Apply principles of basic scientific writing and composition <ul style="list-style-type: none">a. Use clear and precise wordb. Formulate simple technical sentencesc. Construct organized and coherent paragraphs
3. Critically evaluate literature for its ethical use <ul style="list-style-type: none">a. Evaluate credibility of information sourcesb. Select appropriate references for intended ideas and argumentsc. Apply proper principles of paraphrasing
4. Adapt scientific writing to specific formats <ul style="list-style-type: none">a. Describe and identify essential elements of each formatb. Revise and correct excerpts of each formatc. Select key issues to highlight/develop as a function of format
5. Adapt scientific content to a non-scientific audience <ul style="list-style-type: none">a. Extract main ideas/message from scientific documentsb. Translate main ideas/message for a non-scientific audiencec. Tailor communication style to a non-scientific audience

Land Acknowledgement

At Carleton University, it is important that we acknowledge that the land on which we gather is the traditional and unceded territory of the Algonquin nation.

Inclusive Teaching

I am committed to fostering an environment for learning that is inclusive for everyone regardless of gender identity, gender expression, sex, sexual orientation, race, ethnicity, ability, age, class, etc. All students in the class, the instructor, and any guests should be treated with respect during all interactions.

Community Guidelines:

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity*. In our course, we will seek to behave with these values in mind:

	As students, we will...	As a teaching team, we will...
Honesty	<ul style="list-style-type: none"> Honestly demonstrate our knowledge and abilities on assignments and exams Communicate openly without using deception, including citing appropriate sources 	<ul style="list-style-type: none"> Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams Communicate openly and honestly about the expectations and standards of the course through the syllabus, and with respect to assignments and exams
Responsibility	<ul style="list-style-type: none"> Complete assignments on time and in full preparation for class Show up to class on time, and be mentally/physically present Participate fully and contribute to team learning and activities 	<ul style="list-style-type: none"> Give you timely feedback on your assignments and exams Show up to class on time, and be mentally & physically present Create relevant assessments and class activities
Respect	<ul style="list-style-type: none"> Speak openly with one another, while respecting diverse viewpoints and perspectives Provide sufficient space for others to voice their ideas 	<ul style="list-style-type: none"> Respect your perspectives even while we challenge you to think more deeply and critically Help facilitate respectful exchange of ideas
Fairness	<ul style="list-style-type: none"> Contribute fully and equally to collaborative work, so that we are not freeloading off of others Not seek unfair advantage over fellow students in the course 	<ul style="list-style-type: none"> Create fair assignments and exams, and grade them in a fair, and timely manner Treat all students equitably
Trust	<ul style="list-style-type: none"> Not engage in personal affairs while on class time Be open and transparent about what we are doing in class Not distribute course materials to others without authorization 	<ul style="list-style-type: none"> Be available to all students when we say we will be Follow through on our promises Not modify the expectations or standards without communicating with everyone in the course
Courage	<ul style="list-style-type: none"> Say or do something when we see actions that undermine any of the above values Accept a lower or failing grade or other consequences of upholding and protecting the above values 	<ul style="list-style-type: none"> Say or do something when we see actions that undermine any of the above values Accept the consequences (e.g., lower teaching evaluations) of upholding and protecting the above values

*This class statement of values is adapted from Tricia Bertram Gallant, Ph.D.

Mandatory texts and/or handouts: none

Mandatory required materials: a computer and an internet connection

Evaluation:

Progress	15%
Did you know?	15%
Social media	15%
Slide deck	30%
Infographic	25%

Grade Breakdown

Assessment	Item	Weight	Tentative Date
Progress	Weekly progress reports/discussions	15%	Ongoing weekly
	Did you know?	Topic submission	5%
	Assignment submission*	10%	Oct 2
Social media post	Choice of paper	5%	Oct 9
	Final post*	10%	Oct 16
Slide deck	Selected articles	5%	Nov 6
	Draft slide deck	10%	Nov 13
	Final slide desk*	15%	Nov 20
Infographic	Draft infographic	10%	Nov 25
	Final infographic*	15%	Dec 4

- To pass the course, a student **must** submit the above **four** items with an asterisk (*)
- There will be **no changes** (reweighting or any other modification) to this evaluation scheme

Lecture/workshop information:

Lecture material will be presented as PowerPoint slides. This material is for information purposes, to assist the student with preparation the term work in this course.

Teaching and learning activities, including lectures, workshop, discussions, presentations, etc., by both instructors and students, are copy protected and remain the intellectual property of their respective author(s). All course materials, including PowerPoint presentations, outlines, videos, and other materials, are also protected by copyright and remain the intellectual property of their respective author(s).

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s).

Topics covered (with approximate dates):

Week	Course date	Topic	Evaluation/assessment item
1	Sept. 4	Course Introduction Basics of Agrifood Biotechnology	
2	Sept. 11	What topic do I choose?	
3	Sept. 18	Topic workshop	Topic submission DYK
4	Sept. 25	DYK workshop	
5	Oct. 2	Social media post workshop	DYK submission
6	Oct. 9	Social media post workshop	Paper choice submission
7	Oct. 16	Slide deck workshop	Social media post submission
	Oct. 23	Fall break	
8	Oct. 30	Slide deck workshop	
9	Nov. 6	Slide deck workshop	Submission of selected articles
10	Nov. 13	Slide deck workshop	Draft – Slide deck submission
11	Nov. 20	Infographic workshop	Final - Slide deck submission
12	Nov. 25	Infographic workshop	Draft - Infographic submission
	Dec. 4	No class	Final - Infographic submission

Accommodations and Missed Term Work:

Accommodations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website (students.carleton.ca/course-outline).

Missed Term Work

1. Missed term work without accommodation:

- Late term work will be penalized (i.e., lose) 10% per day. An assignment can no longer be submitted 5 days following its initial deadline.

2. Missed term work for short-term accommodation (5 days or less):

As per the [Academic Consideration Policy](#), if students encounter extenuating circumstances that temporarily hinder their capacity to fulfil in-class academic requirements for a period that is five days or less, they can request academic consideration as per the following instructions:

- Contact your instructor(s) as soon as possible (e.g., by email) and normally no later than 24 hours after the submission deadline.
- Fill out this form: [Online Academic Considering Coursework Form](#)
- If granted, an extension of up to five days without penalty will be applied to the initial term work deadline.
- Complete and submit course work per academic consideration, if granted.

Extenuating circumstances are circumstances that:

- are beyond a student's control
- have a significant impact on the student's capacity to meet their academic obligations;
and
- could not have reasonably been prevented

Please note that requests are not automatically approved. Approving and determining the accommodation remains at the discretion of the instructor.

3. Missed term work for longer term incapacitation (5 days or longer):

If you require accommodations for this course that are longer than the 5-day (short-term) period, please email me to discuss how/whether accommodation needs could be met for this course.

Academic Integrity

Academic Integrity is upholding the values of honesty, trust, respect, fairness, responsibility, and courage that are fundamental to the educational experience. Carleton University provides supports such as academic integrity workshops to ensure, as far as possible, that all students understand the norms and standards of academic integrity that we expect you to uphold. Your teaching team has a responsibility to ensure that their application of the Academic Integrity Policy upholds the university's collective commitments to fairness, equity, and integrity.

(Adapted from [Carleton University's Academic Integrity Policy](#), 2021).

Examples of actions that do not adhere to Carleton's Academic Integrity Policy include:

- Plagiarism
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams

Please review the checklist [linked here](#) to ensure you understand your responsibilities as a student with respect to academic integrity and this course.

Sanctions for Not Abiding by Carleton's Academic Integrity Policy

A student who has not upheld their responsibilities under Carleton's Academic Integrity Policy may be subject to one of several sanctions. A list of standard sanctions in science can be found [here](#).

Additional details about this process can be found on [the Faculty of Science Academic Integrity website](#). Students are expected to familiarize themselves with and follow the Carleton University [Student Academic Integrity Policy](#). The Policy is strictly enforced and is binding on all students.

Statement on Generative AI usage (i.e., Chat CPT)

Moderate Use - Content Generation with Attribution

AI Use in this course: Students may use AI tools for sharing ideas, clarifying challenging concepts, or getting started on projects. Some acceptable uses include:

- Brainstorming ideas (e.g., generating essay topics with ChatGPT, using Microsoft Word's Smart Lookup to find inspiration and related topics)
- Creating outlines (e.g., using AI to structure an essay or presentation flow, using Microsoft Word's Outline View with AI suggestions)
- Providing definitions or explanations of complex concepts (e.g., using AI to explain a difficult theory, e.g., using Microsoft Word's Researcher tool to find relevant information)

Documenting Use of AI: It is necessary to document your use of AI in this course, using the following guidelines:

- Clearly identify and cite AI-generated text (e.g., 'The following paragraph was generated by ChatGPT/Microsoft Word's Researcher tool')
- Review, edit, and ensure accuracy and originality of final submissions
- AI-generated content should not exceed 30% of the total assignment length

Why have I adopted this policy? This policy supports the use of AI as a supplementary tool, helping students develop ideas and structure their work while emphasizing the importance of transparency and personal engagement with the content. AI can be used for inspiration and foundational support and can encourage students to critically assess and refine AI-generated material.

Student Rights & Responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the [7 Rights and Responsibilities Policy](#) for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns

If a concern arises regarding this course, **your first point of contact is me:** Email and I will do my best to address your concern. If I am unable to address your concern, the next points of contact are the Chair of the Department of Chemistry, followed by the Office of the Dean of Science

Note: You can also bring your concerns to [Ombuds services](#).

Assistance for Students

Academic and Career Development Services: <http://carleton.ca/sacds/>

Writing Services: <http://www.carleton.ca/csas/writing-services/>

Peer Assisted Study Sessions (PASS): <https://carleton.ca/csas/group-support/pass/>

Math Tutorial Centre: <https://carleton.ca/math/math-tutorial-centre/>

Science Student Success Centre: <https://sssc.carleton.ca/>